

Preface

The business environment is rapidly changing, and intellectual capital has become a key asset of the enterprise. By managing its knowledge assets, an enterprise can improve its competitiveness and adaptability and increase its chances of success. In this issue of the *IBM Systems Journal*, ten papers and two essays deal with various aspects of knowledge management: technology, process, and people.

We gratefully acknowledge the efforts of our two coordinators, Robert Mack and Laurence Prusak, in putting together the current issue. We also thank Robert Cross for his help in the acquisition of papers, and Alan Marwick for his help in planning this issue.

In the paper “Knowledge management technology,” Marwick surveys some of the technologies used in knowledge management and discusses their support of the explicit and tacit forms of knowledge. He finds that the strongest support for knowledge management solutions comes from technologies that deal with explicit forms, such as search and classification. He also points to some encouraging developments, such as use of text-based chat and unrestricted bulletin boards, that might enable the transformation of some tacit knowledge into explicit knowledge.

As organizations grow in size, geographical scope, and complexity, it is increasingly apparent that communities of practice—groups whose members regularly engage in sharing and learning, based on common interests—can improve organizational performance. In “Communities of practice and organizational performance,” Lesser and Storck suggest that we think of a community of practice as an engine for developing social capital. Furthermore, they suggest that building social capital is based on the

existence of communication channels between practitioners, on relationships that build trust and a sense of mutual obligation, and on a common language and context for the community.

In 1995, IBM Global Services began implementing a business model that included developing a set of communities of practice based on the core competencies of the organization. In “Evolving communities of practice: IBM Global Services experience,” Gongla and Rizzuto describe their experience working with over 60 communities over a five-year period, focusing specifically on how communities evolve. They present and discuss an evolution model in terms of persons and organization behavior, supporting processes, and enabling technology factors.

Knowledge management is often seen as a problem of capturing, organizing, and retrieving information. In “The knowledge management puzzle: Human and social factors in knowledge management,” Thomas, Kellogg, and Erickson argue that it is essential for those designing knowledge management systems to consider the human and social factors at play in the production and use of knowledge. They first review work that emphasizes cognitive and social factors in knowledge management. Then they describe two approaches to designing socially informed knowledge management systems, social computing and knowledge socialization.

When defining knowledge management some people emphasize intellectual capital, others think of supporting technologies, whereas others put community building first. In the essay “Views of knowledge are human views” Dueck suggests that a person’s temperament determines that person’s view of knowledge. He shows that tools such as the Keirse

temperament test help illustrate the often overlooked fact that people are different from one another, and some of these differences are profound and influence the way each person sees the world.

In "Linking e-business and operating processes: The role of knowledge management," Fahey et al. take a process perspective and reflect upon the value e-business knowledge contributes in the enhancement of three core operating processes: customer relationship management, supply chain management, and product development management. Moreover, in two case studies, they contrast the strategies of two companies in the e-business-driven transformation of their customer relationship management.

In "Knowledge resource exchange in strategic alliances," Parise and Henderson present a model that might help businesses in designing a profitable alliance strategy. This model, which is based on the knowledge exchange between alliance partners, involves the different dimensions of knowledge resources (tacitness, specificity, and complexity), as well as the different roles of the partner (complementor, competitor, supplier, customer, or other). Their findings suggest that what is important is not necessarily a particular alliance strategy, but rather an alignment between alliance strategy and business strategy.

Capturing knowledge created by knowledge workers on their jobs and making it available to other employees is an important goal of knowledge management, and one of the emerging tools to achieve this goal is the knowledge portal. In "Knowledge portals and the emerging digital knowledge workplace," Mack, Ravin, and Byrd discuss knowledge portal applications developed for use by IBM Global Services practitioners. They describe the role knowledge portals play in supporting knowledge work, as well as the component technologies embedded in portals, such as the gathering of distributed document information, indexing and text search, and categorization.

The Lotus Knowledge Discovery System* is the main knowledge management product of the IBM Corporation. It uses several leading-edge technologies to systematically create associations between corporate expertise and information resources, to personalize and organize knowledge for individuals and communities, and to provide a place for teams to work, make decisions, and act. It also creates a searchable index, computes document values, and provides a search-and-browse user interface. In "The Lotus Knowledge Discovery System: Tools and experient-

es," Pohs et al. describe the technology behind the product, as well as their experiences in deploying this product within the U.S. Joint Forces Command, one of the product's earliest adopters.

Unlike numerical and fixed field data, text cannot be analyzed by standard statistical data mining methods, and thus the wealth of knowledge in large text databases is not readily accessible. Relying on people to perform the analysis can uncover only a tiny fraction of this knowledge. In "Text analysis and knowledge mining system," Nasukawa and Nagano focus on text mining technology that allows the extraction of knowledge from large amounts of textual data, and they describe a prototype system implementing this technology. Using this prototype on text databases of customer service centers, they were able to trace product failures, to determine the factors that have led to rapid increases in the number of service calls, and to assess help center productivity.

Although humans understand speech with ease and use speech to express complex ideas, automatic speech recognition with computers is hard, and extracting knowledge from speech is even harder. In "Toward speech as a knowledge resource," Brown et al. survey the current state of the art in speech recognition and the relevant, successful applications of speech recognition in multimedia indexing and search. Furthermore, they present a number of exploratory applications of speech recognition that advance the goal of using speech as a knowledge resource.

In the essay "Where did knowledge management come from?" Prusak looks at the history of knowledge management and offers insights into what knowledge management means today and where it may be headed in the future.

The next issue of the *Journal* contains papers on software engineering that focus on software debugging, testing, and verification.

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